

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
29 December 2005 (29.12.2005)

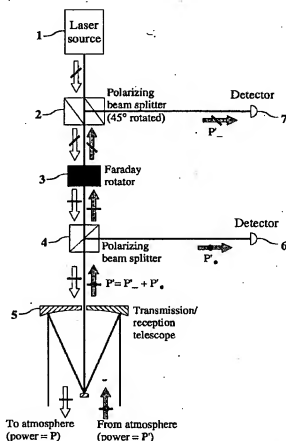
PCT

(10) International Publication Number
WO 2005/124393 A1

- (51) International Patent Classification⁷: G01S 17/95, 7/481
- (21) International Application Number: PCT/IT2004/000637
- (22) International Filing Date: 18 November 2004 (18.11.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: RM2004A000291 16 June 2004 (16.06.2004) IT
- (71) Applicant (for all designated States except US): FIN-MECCANICA S.p.A. [IT/IT]; P.zza Montc Grappa, 4, I-00195 Roma (IT).
- (72) Inventor; and
(75) Inventor/Applicant (for US only): CESARE, Stefano [IT/IT]; Via Sostegno, 94, I-10146 Torino (IT).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

[Continued on next page]

(54) Title: BEAM SEPARATION APPARATUS FOR MONOSTATIC LIDARS



(57) Abstract: Monostatic LIDARs use the same telescope to send the laser beam in atmosphere and to collect the backscattered echo. An important element of monostatic LIDARs is the optical separator between the emission and reception paths of the laser beam. By using a system made by a Faraday rotator in combination with two polarizing beam splitters suitably oriented, it is possible to achieve this separation with minimum losses with respect to prior systems using semi-reflective plates and/or polarizing beam splitters in conjunction with quarter-wave plates. The effectiveness of this system does not rely on the maintenance of the polarization status of the laser beam when backscattered by the atmosphere molecules and particles, neither on the reduction of the received laser power relatively to the transmitted one. The system is simple, compact, and can work at several wavelengths of the laser source.

WO 2005/124393 A1



FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,
SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *with international search report*